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Claims

1. Recombinant cellular system, comprising an animal host cell, comprising the following recombinant proteins

- a recombinant specific G protein-coupled receptor, and
- the recombinant Ca2+ permeable channel CNGA2.

2. Recombinant cellular system according to claim 1, furthermore comprising a recombinant protein from the group of connexins, e.g. Cx43 or Cx26.

3. Recombinant cellular system according to claim 1 or 2, wherein the recombinant specific G protein-coupled receptor is selected from the group of the particular guanylyl-cyclases, e.g. type A to G.

4. Recombinant cellular system according to claim 1 or 2, furthermore comprising a cyclase that is harmonised with the specific G protein-coupled receptor, e.g. an adenylyl- or guanylyl-cyclase.

5. Recombinant cellular system according to claim 1, 2 or 4, wherein the recombinant specific G protein-coupled receptor is selected from the group of pheromone receptors, e.g. of the V1R-type with all families VR-a to VR-l, including the V3R-type (VR-d), for example V1R-b2, the hormone receptors, e.g. the beta-adrenergic receptors and the olfactory receptors, e.g. OR1A1, OR1A2, Olfr43, Olfr49, MOR261-10, MOR267-1, LOC331758, Olfr41 or Olfr6.

6. Recombinant cellular system according to claim 1, 2, 4 or 5, furthermore comprising a recombinant G-protein that is harmonised with the specific G protein-coupled receptor, e.g. G-alpha-olf.

7. Recombinant cellular system according to any of the aforementioned claims, wherein the animal host cell is selected from murine cell lines or human cell lines, e.g. human cancer cell lines, such as, for example HeLa or HEK293.

8. Recombinant cellular system according to any of the aforementioned claims, wherein the cellular system comprises a potential recombinant specific G protein-coupled receptor.

9. Recombinant cellular system according to claim 7, selected from the cellular systems HeLa-Cx43/CNGA2/Olfr49; HeLa-Cx43/CNGA2/G-alpha-olf; HeLa-Cx43/CNGA2/G-alpha-olf/Olfr 49; HeLa-Cx43/CNGA2/G-alpha-olf/Olfr41; HeLa-Cx43/CNGA2/G-alpha-olf/Olfr 6 or HeLa-Cx43/CNGA2/G-alpha-olf/OR1A1.

10. Recombinant cellular system according to any of the aforementioned claims, wherein the recombinant proteins are present stably and/or transiently transfected.

11. Recombinant cellular system HeLa-Cx43/CNGA2/G-alpha-olf, as deposited on April 20, 2004 at the DSMZ - Deutsche Sammlung von Mikroorganismen and Zellkulturen GmbH in Mascheroder Weg 1b, D-38124 Braunschweig with the deposit number DSM ACC2649.

12. Method for producing a recombinant cellular system, comprising
- providing of an animal host cell,
- introducing a recombinant specific G protein-coupled receptor or a potential recombinant specific G protein-coupled receptor, and
- introducing the recombinant Ca2+ permeable channel CNGA2.

13. Method according to claim 12, furthermore comprising
- introducing of a recombinant protein from the group of the connexins, e.g. Cx43 or Cx26.

14. Method according to claim 12 or 13, furthermore comprising
- introducing of a cyclase that is harmonised with the specific G protein-coupled receptor, e.g. an adenylyl- or guanylyl-cyclase.

15. Method according to any of claims 12 to 14, furthermore comprising
- introducing of a recombinant G-protein that is harmonised with the specific G protein-coupled receptor, e.g. G-alpha-olf.

16. Method according to any of claims 12 to 15, wherein the introducing is selected from (Ca2+-phosphate-)transfection, lipofection or electroporation, as well as subsequent optional

integration into the genome with the aid of a recombinase and/or antibiotic-selection cloning, and transduction.

17. Method for identifying receptor activating substances, comprising the steps of
- providing a recombinant cellular system according to any of claims 1 to 7 or 9 to 11,
- contacting of the cellular system with a potential G protein-coupled receptor activating substance, and
- measuring of the activation or inhibition of the Ca2+ influx into the cell.

18. Method according to claim 17, wherein the potential G protein-coupled receptor inducing substance is selected from odorants, such as, for example, (-)citronellal or beta-citronellol, pheromones, hormones, such as, for example, adrenalin or natriuretic peptide type-C.

19. Method according to claim 17 or 18, wherein the measuring of the Ca2+ influx into the cell includes a loading of the cell with Fura-2-AM or Fluo-4-AM, and measuring of the emission-wavelength at 515 nm.

20. Method according to any of claims 17 to 19, wherein the cellular system is pre-treated with an enhancer, such as, for example forskolin or thapsigargin.

21. Method for producing a pharmaceutical composition, comprising the steps of
- performing a method according to any of claims 17 to 20, and
- formulating of the obtained G protein-coupled receptor inducing substance with known auxiliary agents and additives.

22. Method for identifying of G protein-coupled receptors, comprising the steps of
- providing a recombinant cellular system according to claim 8,
- contacting of the cellular system with a receptor-activating substance or presumably receptor-activating substance, and
- measuring of the activation or inhibition of the Ca2+ influx into the cell.

23. Method according to any of claims 17 to 22, wherein the method is performed in a high-throughput-environment, e.g. in microtiter-plates in a fluorescence-plate reader or high-resolution microscopy-supported on the level of individual cells.

24. Use of a recombinant cellular system according to any of claims 1 to 7 and 9 to 11 for deorphanisation of cellular G protein-coupled receptors through identifying of receptor inducing substances, e.g. odorants.

25. Use of a recombinant cellular system according to claim 8 for identifying of cellular G protein-coupled receptors.